

Key book

Understanding Mathematics

SPECIAL EDITION

6



PROGRESS PUBLISHERS
KRISHNA NAGAR, DELHI - 110051

EMAIL : progresspublishers@gmail.com

Chapter I

Exercise I.1

1. (a) 4,567 (b) 878 (c) 5,466 (d) 7,690
2. (a) 976 (b) 3,657 (c) 2,364 (d) 5,689
3. (a) 8,67,690,4567 (b) 97,376,3674,3876 (c) 12,90,862,5647
4. (a) 478, 98,39,2 (b) 5347,342,18,3 (c) 1097,1057,246,91

Exercise I.2

1. (a) 3714, 4137 (b) 6439, 4963 (c) 8,150, 8,105 (d) 1,760, 7,601
2. (a) 8753 (b) 8542 (c) 9770 (d) 4321
3. (a) 1029 (b) 1256 (c) 1469 (d) 4057
4. *Greater number* *Smaller number*
(a) 7432 2347
(b) 9864 4689
(c) 6530 3056
(d) 8710 1078

Exercise I.3

1. (a) 37,80,96,352 Thirty seven crore, eighty lakh, ninty-six thousand, three hundred and fifty-two
(b) 8,35,31,028 Eight crore, thirty-five lakh, thirty one thousand and twenty-eight
(c) 50,25,20,892 Fifty crore, twenty five lakh, twenty thousand, eight hundred and ninety-two
(d) 26,32,09,875 Twenty six crore, thirty two lakh, nine thousand eight hundred and seventy five
2. (a) $67,55,34,211 = 675,534,211$
Six hundred seventy five million, five hundred thirty four thousand two hundred and eleven
(b) $78,76,32,190 = 787,632,190$
Seven hundred eighty seven million, six hundred thirty two thousand, one hundred ninety
(c) $9,49,85,324 = 94,985,324$
Ninety four million, nine hundred eighty five thousand three hundred and twenty-four
(d) $17,03,82,647 = 170,382,647$
One hundred seventy million, three hundred eighty two thousand and six hundred and forty-seven
3. 9,00,00,000
4. (a) 6,93,00,000 (b) 69,99,300 (c) 63,00,000 (d) 69,30,00,000
5. Lakh lakhs
6. Thousand thousands

Exercise 1.4

- | | | | |
|-----------------|------------------|-----------------|-------------|
| 1. Rs 15,342 | 2. 1,70,880 | 3. 20,60,280 | 4. 7,54,299 |
| 5. 94,070 | 6. 65 km | 7. Rs 49,30,418 | 8. 2,27,371 |
| 9. 1,80,80,852 | 10. Rs 92,04,003 | 11. 66m | 12. 1800 |
| 13. 16 kg 220 g | 14. 13 jugs | 15. 5k g 374 g | |

Exercise 1.5

- | | | | |
|---------------|------------|------------|-----------|
| 1. (a) 770 | (b) 6,940 | (c) 60 | (d) 2,020 |
| 2. (a) 56,800 | (b) 9,000 | (c) 4,400 | (d) 800 |
| 3. (a) 6,000 | (b) 12,000 | (c) 91,000 | (d) 5,000 |
| 4. (a) 3,200 | (b) 10,000 | (c) 6,500 | (d) 1,000 |
| 5. (a) 14,000 | (b) 80,000 | (c) 1000 | (d) 200 |

Exercise 1.6

- | | | | |
|--------------|-------------|----------|------------|
| 1. (a) LXV11 | (b) DCCCLIX | (c) XX | (d) CXLIII |
| (e) XXXIV | (f) CDLVI | (g) LXXV | (h) CD |
| (i) XCVIII | (j) LXXXVII | | |
| 2. (a) 76 | (b) 26 | (c) 10 | (d) 39 |
| 3. (a) > | (b) < | (c) > | (d) < |
| (e) = | (f) < | | |

MCQ – I

- | | | | |
|--------------------------|--|------------|----------|
| 1. 9,653 | 2. $4 \times 10,000 + 7 \times 1,000 + 9 \times 100 + 6 \times 10 + 2$ | | |
| 3. 100 lakh | 4. 789,654 | 5. 9,000 | 6. MD |
| 7. $27 \times (200 + 4)$ | 8. 65 | 9. 1000 mg | 10. 8765 |

Chapter 2

Exercise 2.1

- | | | | |
|-----------|--------|--------|--------|
| 1. (a) 6 | (b) 12 | (c) 9 | (d) 11 |
| 2. (a) 7 | (b) 3 | (c) 3 | (d) 9 |
| 3. (a) 12 | (b) 16 | (c) 15 | (d) 14 |
| 4. (a) 40 | (b) 16 | (c) 39 | |
| 5. (a) F | (b) T | (c) T | (d) F |
| (e) F | (f) F | | |

Exercise 2.2

- | | | | |
|--|----------------------|-------|-------------|
| 1. (a) 2008 | (b) 9990 | | |
| 3. (a) T | (b) F | (c) T | (d) F (e) F |
| 4. (a) $(7+4)+2 = 11+2 = 13$, | $7+(4+2) = 7+6 = 13$ | | |
| (b) $(9+5)+3 = 14+3 = 17$, | $9+(5+3) = 9+8 = 17$ | | |
| 5. Subtraction of whole numbers is not commutative.
Eg. Take two whole numbers 3 and 9
$3 - 9 = -6$, not a whole number, $9 - 3 = 6$, Hence $a - b \neq b - a$ | | | |
| 6. If $a = 15$, $b = 9$, $c = 4$
$(a-b)-c = (15-9)-4 = 6-4 = 2$
$a-(b-c) = 15-(9-4) = 15-5 = 10$
hence, $(a-b) - c \neq a-(b-c)$ | | | |

Exercise 2.3

- | | | | |
|-----------------|----------------|--------------|---------------|
| 1. (a) 1 | (b) 80 | (c) 27 | (d) 5 |
| (e) 120 | (f) 0 | | |
| 2. (a) T | (b) T | (c) F | (d) T |
| (e) F | (f) T | | |
| 3. (a) 1,79,400 | (b) 17,700 | (c) 37,500 | (d) 27,90,000 |
| 4. 215 | 5. Rs 6,60,150 | 6. Rs 55,800 | 7. Rs 1,650 |

Exercise 2.4

- | | | |
|--|---|---|
| 1. (a)  | (b)  | (c)  |
| 2. (a)  | (b)  | (c)  |
| 3. (a)  | (b)  | (c)  |

MCQ – II

- | | | | |
|-------------------|--------------------|---------------------------------|-------------------------|
| 1. 0 | 2. 111123 | 3. 12000 | 4. Commutative Property |
| 5. a whole number | | 6. not defined | 7. 1 |
| 8. 3999 | 9. $a + 0 = 0 + a$ | 10. $(a + b) + c = a + (b + c)$ | |

Chapter 3

Exercise 3.1

- | | | | |
|------------|---------|---------|---------|
| 1. (a) 43 | (b) 3 | (c) 648 | (d) 96 |
| 2. (a) 120 | (b) 507 | (c) 6 | (d) 588 |

Exercise 3.2

- | | |
|--------------------------------------|------------------------------|
| 1. (a) 1, 2, 3, 6, 9, 18 | (b) 1, 3, 7, 21 |
| (c) 1, 2, 3, 4, 6, 8, 12, 16, 24, 48 | (d) 1, 3, 7, 9, 21, 63 |
| (e) 1, 2, 4, 5, 10, 20, 25, 50, 100 | (f) 1, 2, 4, 31, 62, 124 |
| 2. (a) 5, 10, 15, 20, 25 | (b) 9, 18, 27, 36, 45 |
| (c) 11, 22, 33, 44, 55 | (d) 15, 30, 45, 60, 75 |
| (e) 60, 120, 180, 240, 300 | (f) 200, 400, 600, 800, 1000 |
| 3. (a) 640 | (b) 45, 60, 75 |
| 4. (a) Yes | (b) No |
| 5. (a) 48, 96, 144, 192, 240 | (b) 2, 4, 8, 10, 20 |

Exercise 3.3

- (a) 23, 29, 31, 37, 41, 43, 47, 53, 59
(b) 83, 89, 97
- (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43)
- 2, 4, 6, 8, 10, 12, 14, 16, 18
- (a) (7, 10) (b) (16, 25) (c) No
- (a) True (b) False (c) True (d) True
(e) False (f) False (g) True
- 23 and 47

Exercise 3.4

- (a) Yes (b) Yes (c) No (d) Yes
- (a) No (b) Yes (c) Yes (d) No
- (a) No (b) No (c) Yes (d) No
- (a) No (b) Yes (c) No (d) Yes
- (a) No (b) No (c) No (d) No
- (a) No (b) Yes (c) Yes (d) No
- (a) By 5 (b) By none (c) By 5 and 10 (d) By 5
- (a) 2 (b) 2 (c) 7 (d) 0
- (a) F (b) T (c) T (d) F
- 20, 60, 200, 40

Exercise 3.5

- (a) $2 \times 3 \times 3$ (b) $2 \times 2 \times 3 \times 3$ (c) $3 \times 3 \times 5$ (d) $2 \times 2 \times 2 \times 7$
(e) $2 \times 3 \times 3 \times 5$ (f) $5 \times 7 \times 7$ (g) 5×73 (h) $2 \times 2 \times 2 \times 2 \times 2 \times 2$
(i) $3 \times 5 \times 7 \times 7$ (j) $2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 7$

Exercise 3.6

- (a) 18 (b) 24 (c) 15 (d) 35
(e) 18 (f) 9
- (a) 2 (b) 4 (c) 1 (d) 18
(e) 2 (f) 1

Exercise 3.7

- (a) 48 (b) 72 (c) 308 (d) 420
(e) 360 (f) 3528 (g) 7040 (h) 2520
- (a) 360 (b) 540 (c) 3780 (d) 2244000
(e) 65100 (f) 336600

Exercise 3.8

- 138 2. 107 3. 34 cm 4. 170 l
- 36 6. 25 cm

Exercise 3.9

- | | | |
|--------|----------|------------------------------------|
| 1. 120 | 2. 295 | 3. 1 min. 24 sec past 12, 10 times |
| 4. 12m | 5. 99720 | 6. 36 min. 7. 256 |

MCQ – III

- | | | | |
|------------------|-----------------|--------|-------|
| 1. 12 | 2. 1 | 3. 2 | 4. 1 |
| 5. their product | 6. 65583, 65637 | 7. 232 | 8. 95 |
| 9. 151 | 10. 1279 | | |

Unit 4

Exercise 4.1

- (a) AB, BC, CD, DE, EF, FA
(b) PQ, QR, RS, SP, PT, QT, RT, ST, PR, QS
(c) AB, BC, CD, DA, AC
- (a) True (b) False (c) True (d) False
(e) False (f) True
- (a) A, B, M, P, Q (b) AB
(c) MA, MB, MP, MQ (d) AM, BM, MP, MQ

Exercise 4.2

- (a) open (b) open (c) closed (d) closed
(e) closed (f) closed (g) open (h) open
- (a) Points in side the figure - E, F, K
Points on the figure - A, B, C, D, M
Points out side the figure - Q
(b) Points inside the figure - C, P, Q
Points on the figure - R, N, F, S, T
Points outside the figure - M
- (a) Yes (b) 6 (c) Yes
(d) (A, B), (C, D), (E, F), (F, A) (e) Yes (f) AD, FC

Exercise 4.3

- $\angle A, \angle B, \angle C, \angle D$ or $\angle DAB, \angle ABC, \angle BCD, \angle CDA$
- (a) $\angle XOY, \angle YOX, \angle O$ or $\angle p$ (b) $\angle BAC, \angle CAB, \angle A$ or $\angle n$
(c) $\angle PQR, \angle RQP, \angle Q$ or $\angle r$
- (a) C, P, A (b) C, E, X (c) P, O, E, X (d) C
- (a) C (b) AB (c) $\angle BAC, \angle ABC$
(d) B (e) $\angle ACB, \angle ABF$

Exercise 4.4

2. (a) $\triangle ABC$, $\triangle BAC$ or $\triangle ACB$ (b) AB
(c) AC (d) $\angle A$ (e) C
3. (a) $\triangle ABD$, $\triangle ACD$, $\triangle CAB$
(b) $\angle ACB$, $\angle CAB$, $\angle CAD$, $\angle BAD$, $\angle ADC$, $\angle ADB$
(c) AC, AB, AD, CD, BD, BC
(d) $\triangle ABD$, $\triangle ABC$
4. (a) F, G (b) B (c) P, Q, R, D, A, C

Exercise 4.5

2. (a) Yes (b) No (c) Yes (d) Yes
3. (a) (AD, BC), (AB, CD)
(b) (AB, BC), (BC, CD), (CD, DA), (DA, AB)
(c) $(\angle A, \angle C)$, $(\angle B, \angle D)$ (d) AC and BD
4. (a) PQRS (b) X, Y (c) A, D (d) P, Q, R, S, C, B

Exercise 4.6

2. (a) OB, OA, OC (b) BC, AP, PQ, AQ
(c) BC, PQ, AP (d) AB
3. (a) Diameter (b) Sector (c) Arc (d) Chord
4. (a) E, O, F (b) L, M, N (c) A, B, C, D, X, Y
5. (a) F (b) T (c) T (d) F (e) F (f) T

MCQ – IV

1. one 2. infinite 3. three 4. one end point
5. many sides 6. three vertices 7. all sides are equal
8. 16.4 cm 9. a chord 10. two equal arcs

Chapter 5

Exercise 5.1

1. Yes
3. (a) Yes (b) Yes (c) No (d) Yes
4. (a) Yes (b) No (c) (AB, PQ), (AB, CD), (XY, PQ), (EF, CD)
(d) AB and EF (e) No

Exercise 5.2

2. 14
3. (a) Obtuse (b) Right (c) Complete (d) Acute
(e) Straight (f) Reflex
4. (a) 135° (b) 90° (c) 50°
(d) $\angle ABD = 70^\circ$, $\angle CBD = 70^\circ$, $\angle ABC = 140^\circ$
5. (a) 90° (b) 180° (c) 360° or 0°
6. (a) F (b) T (c) F (d) T (e) F

Exercise 5.3

- (a) No (b) Yes (c) Yes
- (a) 5, Pentagon (b) 5, Pentagon (c) 7, Heptagon (d) 4, Quadrilateral
(e) 7, Heptagon (f) 8, Octagon (g) 3, Triangle (h) 5, Pentagon
- 3 - Triangle
4 - Quadrilateral
5 - Pentagon
6 - Hexagon
8 - Octagon

Exercise 5.4

- (a) Scalene (b) Equilateral (c) Isosceles
- (a) Acute Triangle (b) Obtuse Triangle
(c) Right Triangle
- 50° , 90° , and 40°
- (a) 100° (b) 80° (c) 40°
- 60°

Exercise 5.5

- (a) Rhombus (b) Square (c) Trapezium (d) Rectangle
- (a) all sides are equal and all angles are right angles.
(b) They both have 4 sides each.
(c) All angles are right angles.
(d) All sides are equal as well as all angles are equal to 90° .
- (a) F (b) T (c) F (d) T

Exercise 5.6

- (a) Sphere (b) Cylinder (c) Cone (d) Cuboid
(e) Sphere (f) Cube
- (a) solid (b) plane (c) solid (d) solid
(e) plane (f) solid (g) solid (h) plane
(i) solid (j) solid (k) plane (l) plane
- Rectangular faces, square base

MCQ – V

- 270°
- 60°
- 360°
- 12
- 4 faces
- $L = B = H$
- Kaleidoscope
- Intersection of two faces
- Cube
- 6

Exercise 6.1

- The negative numbers (those less than zero) together with whole numbers are called integers.
- (a) False (b) False (c) True
- (a) Fall in temperature (b) Deposit of money in to bank
(c) Loss of Rs 70 (d) losing a weight of 6kg
(e) 56 (f) -80
- (a) -30°C (b) +10 km (c) +Rs 5020 (d) -15km
(e) -34
- (a) -6, -5, -4, -3 (b) 1, 2, 3, 4
(c) -9, -8, -7 (d) -2, -1, 0, 1, 2
- (a) 8 (b) -9 (c) 4 (d) 0 (e) 2 (f) -10
- (a) > (b) < (c) > (d) > (e) > (f) <
- (a) -7, -3, 0, 4, 10, 12 (b) -102, -79, -10, -1, 22, 48
(c) -165, -7, 7, 11, 15, 666 (d) -10, -5, -1, 0, 6, 9
- (a) 4, 2, 0, -2, -6, -10 (b) 110, 47, 13, -1, -8, -24
(c) 470, 120, -20, -63, -65, -85 (d) 66, 53, 21, -19, -30, -75
- (a) -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5
(b) 0, 1, 2, 3, 4, 5
(c) 1, 2, 3, 4, 5
- (a) 9 (b) 15 (c) 96 (d) 0
(e) 57 (f) 123 (g) 14 (h) 10

Exercise 6.2

- (a) 4 (b) -11 (c) 9 (d) -1
- (a) 2 (b) -4 (c) -4 (d) -9
(e) -2 (f) -5 (g) 7 (h) 6
- (a) -5 (b) 50 (c) 0 (d) -30
- (a) 73 (b) 267 (c) -91 (d) -1125 (e) 430 (f) 0
- (a) 39 (b) 0 (c) 18 (d) -14 (e) -1
- 28m or 28m towards south 7. 5

Exercise 6.3

- (a) 6 (b) 20 (c) 3 (d) -20 (e) -11 (f) 22
- (a) -12 (b) -7 (c) 2 (d) -7 (e) -22 (f) -25
- (a) 4 (b) 13 (c) -9 (d) 1 (e) -5 (f) 13
- 123

5. (a) -7 (b) 92 (c) 0 6. no
 7. -172 8. 77 years 9. Jammu 10. 124m

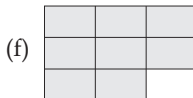
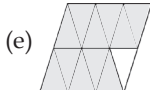
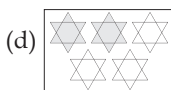
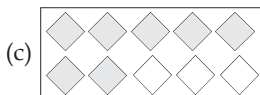
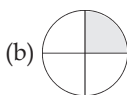
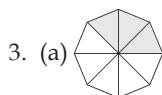
MCQ – VI

1. -1, 0, 1, 2 2. -3, -6 3. 10 4. 11
 5. -1 6. < 7. True 8. Positive
 9. Neither positive nor negative 10. Either positive or negative

Chapter 7

Exercise 7.1

1. (a) Numerator = 3, Denominator = 8
 (b) Numerator = 5, Denominator = 11
 (c) Numerator = 4, Denominator = 9
 (d) Numerator = 7, Denominator = 15
 (e) Numerator = 23, Denominator = 61
 (f) Numerator = 0, Denominator = 10
 (g) Numerator = 7, Denominator = 31
 (h) Numerator = 13, Denominator = 21
2. (a) $\frac{8}{18}$ (b) $\frac{5}{8}$ (c) $\frac{4}{12}$ (d) $\frac{8}{15}$
 (e) $\frac{3}{9}$ (f) $\frac{3}{6}$ (g) $\frac{4}{10}$ (h) $\frac{6}{12}$



4. $\frac{7}{24}$ 5. $\frac{15}{60}$ 6. 8 Toffees
 9. A - $\frac{2}{10}$, B - $\frac{5}{10}$, C - $\frac{7}{10}$, D - $\frac{9}{10}$ 10. $\frac{10}{18}$, $\frac{5}{18}$

Exercise 7.2

1. (a) Proper (b) Improper (c) Mixed (d) Improper
 (e) Proper (f) Mixed (g) Improper (h) Proper
 (i) Improper (j) Improper

2. (a) $3\frac{1}{2}$ (b) $2\frac{3}{4}$ (c) $7\frac{2}{5}$ (d) $5\frac{1}{10}$ (e) $8\frac{5}{12}$
3. (a) $\frac{15}{30}, \frac{20}{30}, \frac{66}{30}$ (b) $\frac{7}{24}, \frac{10}{24}, \frac{9}{24}$

Exercise 7.3

1. (a) (i) and (iii) (b) (i), (iii) and (iv)
2. (a) (i) $\frac{1}{2}$ (ii) $\frac{4}{6}$ (iii) $\frac{3}{9}$ (iv) $\frac{4}{8}$ (i) and (iv) are equivalent fractions.
 (b) (i) $\frac{6}{9}$ (ii) $\frac{2}{6}$ (iii) $\frac{8}{12}$ (iv) $\frac{4}{8}$ (i) and (iii) are equivalent fractions.
3. (a) $\frac{5}{7} = \frac{15}{21}, \frac{10}{14}, \frac{20}{28}$ (b) $\frac{8}{15} = \frac{16}{30}, \frac{24}{45}, \frac{32}{60}$
 (c) $\frac{2}{9} = \frac{4}{18}, \frac{6}{27}, \frac{8}{36}$ (d) $\frac{11}{13} = \frac{22}{26}, \frac{33}{39}, \frac{44}{52}$
 (e) $\frac{9}{25} = \frac{18}{50}, \frac{27}{75}, \frac{36}{100}$
4. (a) 100 (b) 15 (c) 18 (d) 1 (e) 3
5. (a) $\frac{15}{20}$ (b) $\frac{3}{4}$ (c) $\frac{21}{17}$ (d) $\frac{5}{12}$
6. (a), (c), (f), (h) and (i)
7. (a) $\frac{1}{3}$ (b) $\frac{1}{15}$ (c) $\frac{1}{2}$ (d) $\frac{7}{10}$ (e) $\frac{1}{2}$
 (f) $\frac{1503}{10}$ (g) $\frac{2}{3}$ (h) $\frac{2}{5}$ (i) $\frac{9}{2}$ (j) $\frac{5}{9}$
8. Sashi = $\frac{15}{40}$ or $\frac{3}{8}$; Manoj = $\frac{45}{60}$ or $\frac{3}{4}$; Rasheed = $\frac{75}{80}$ or $\frac{15}{16}$

Exercise 7.4

1. (a) < (b) > (c) > (d) >
 (e) < (f) >
2. (a) $\frac{7}{15} < \frac{8}{6}$ (b) $\frac{4}{25} < \frac{6}{13}$ (c) $\frac{2}{7} < \frac{3}{5}$ (d) $\frac{9}{20} < \frac{11}{15}$
 (e) $\frac{30}{40} > \frac{20}{50}$ (f) $\frac{5}{9} = \frac{40}{72}$
3. (a) $\frac{4}{11}, \frac{17}{35}, \frac{3}{5}$ (b) $\frac{15}{75}, \frac{12}{16}, \frac{13}{20}$
 (c) $\frac{1}{2}, \frac{3}{5}, \frac{2}{3}$ (d) $\frac{6}{30}, \frac{15}{27}, \frac{9}{15}$

4. (a) $\frac{2}{8}, \frac{4}{8}, \frac{5}{8}, \frac{6}{8}$; Ascending order $\frac{2}{8} < \frac{4}{8} < \frac{5}{8} < \frac{6}{8}$

Descending order $\frac{6}{8} > \frac{5}{8} > \frac{4}{8} > \frac{2}{8}$

(b) $\frac{3}{9}, \frac{5}{9}, \frac{5}{9}, \frac{6}{9}$ Ascending order $\frac{3}{9} < \frac{5}{9} = \frac{5}{9} < \frac{6}{9}$

Descending order $\frac{6}{9} > \frac{5}{9} = \frac{5}{9} > \frac{3}{9}$

5. Sunita

Exercise 7.5

1. (a) $\frac{31}{32}$ (b) $\frac{8}{21}$ (c) $\frac{11}{15}$ (d) $\frac{7}{10}$

2. (a) $\frac{41}{40}$ (b) $\frac{31}{22}$ (c) $\frac{83}{90}$ (d) $\frac{37}{40}$

3. (a) $\frac{7}{67}$ (b) $\frac{21}{103}$ (c) $\frac{1}{2}$ (d) $\frac{13}{30}$

4. (a) $\frac{1}{10}$ (b) $\frac{5}{4}$

MCQ – VII

1. $\frac{-7}{12}$ 2. $\frac{2}{3}$ 3. $\frac{1}{4}$ 4. A ate more than B

5. $\frac{4}{5}, \frac{7}{15}, \frac{3}{10}$ 6. $\frac{2}{5}$ 7. $>$ 8. $\frac{72}{90}$

9. $4\frac{8}{23}$ 10. $\frac{114}{30}, \frac{81}{30}, \frac{158}{30}$

Chapter 8

Exercise 8.1

2. (a) 0.7 (b) 600.2 (c) 0.80 (d) 200.3

(e) 40.7 (f) 32.05

4. (a) $<$ (b) $>$ (c) $<$ (d) $<$

(e) $<$ (f) $<$

5. (a) 0.08 (b) 2.756 (c) 31.5 (d) 2.90

(e) 0.029 (f) 0.48 (g) 3.4 (h) 6.7

6. (a) $\frac{13}{2}$ (b) $\frac{3767}{50}$ (c) $\frac{127}{50}$ (d) $\frac{1901}{20}$

(e) $\frac{318}{25}$ (f) $\frac{1}{40}$ (g) $\frac{7}{400}$ (h) $\frac{1401}{200}$

7. 0.57

8. 0.4

Exercise 8.2

1. (a) 571.364 (b) 15.57 (c) 106.85 (d) 909.88
 (e) 783.571 (f) 20.397
2. (a) 9.15 (b) 14.72 (c) 31.609 (d) 5.829
 (e) 12.192 (f) 17.435
3. Rs 239.92 4. 0.473 m 5. 1 m 69 cm 6. Yes
7. 196 km 78 m 8. 5 m 21 cm 9. 19 kg 10 gm 10. Rs 342.25

MCQ – VIII

1. $3\frac{2}{100}$ 2. 4000.007 3. $3.76 > 3.67$ 4. 6.268
5. 4.44 6. 0.28 7. 0.35, 4.265, 19.32
8. 2.017 kg 9. 12.925 10. 12000.605

Chapter 9**Exercise 9.1**

1. (a) 8^6 (b) $(-11)^4$ (c) $\left(\frac{4}{9}\right)^5$ (d) $2^4 \times 3^3$
2. (a) 343 (b) 20736 (c) 216 (d) -1
 (e) 256 (f) $\frac{64}{729}$
3. $2 \times 3^2 \times 7^2$
4. (a) 2^6 (b) $2^6 \times 3^3$ (c) $\left(\frac{2}{5}\right)^4$ (d) $\left(-\frac{5}{9}\right)^3$

Exercise 9.2

1. (a) $(-12)^2 = 144$, $(-12)^3 = -1728$ (b) $(17)^2 = 289$, $(17)^3 = 4913$
 (c) $\left(\frac{3}{8}\right)^2 = \frac{9}{64}$, $\left(\frac{3}{8}\right)^3 = \frac{27}{512}$ (d) $\left(2\frac{1}{5}\right)^2 = 4\frac{21}{25}$, $\left(2\frac{1}{5}\right)^3 = 10\frac{81}{125}$
2. (a) 9 (b) 100 (c) $\frac{5}{6}$ (d) $\frac{11}{8}$
3. (a) 21 (b) $-\frac{4}{3}$ (c) 10 (d) $\frac{5}{6}$

Chapter 10**Exercise 10.1**

- 1.
- | Height (in cm) | Tally Marks | Frequency |
|----------------|-------------|-----------|
| 118 | | 1 |
| 120 | | 5 |
| 122 | | 5 |
| 125 | | 5 |
| 130 | | 4 |
| Total | | 20 |
- 2.
- | Water Bill (in Rs) | Tally Marks | Frequency |
|--------------------|-------------|-----------|
| 180 | | 4 |
| 220 | | 6 |
| 230 | | 6 |
| 280 | | 6 |
| 320 | | 2 |
| 410 | | 1 |
| Total | | 25 |

3.

Number of Goods	Tally Marks	Frequency
1		2
2		2
3		1
4		1
5		3
6		2
7		2
8		3
9		2
10		1
11		1
12		6
13		1
14		3
Total		30

(b) 6 (c) 2 (d) 3

4.

Daily wages (in Rs)	Tally Marks	Frequency
35		4
40		2
45		4
46		1
49		1
50		3
52		3
55		1
57		1
60		3
65		2
70		3
72		2
80		2
Total		32

(b) Rs 80 (c) Rs 35 (d) 12

5.

Marks	Tally Marks	Frequency
14		5
17		1
19		8
21		5
25		8
27		5
28		1
30		2
Total		35

(a) 30 (b) 14 (c) 2 (d) 8 (e) 14

Exercise 10.2

1.

Class	Contribution
VI	    
VII	    
VIII	    
IX	    
X	    

 represents Rs 50.

2.

Animal	Number of Animals
Elephants	    
Tigers	  
Lions	 
Bears	

 represents 5 animals.

3.

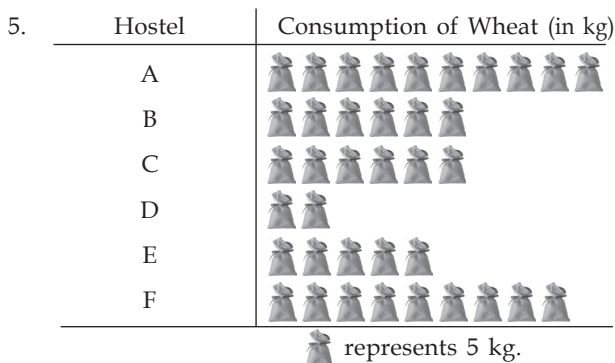
Year	Number of Students
1996	   
1998	     
2000	     
2002	     
2004	     

 represents 100 students.

4.

Flower	Number of Flowers
Rose	  
Dahlia	   
Marigold	 

 represents 50 flowers.



6. (a) May (b) April (c) 55

Exercise 10.3

- (a) It represents the number of vehicles sold by a dealer on different days in a particular week.

(b) Tuesday, 400

(c) 250

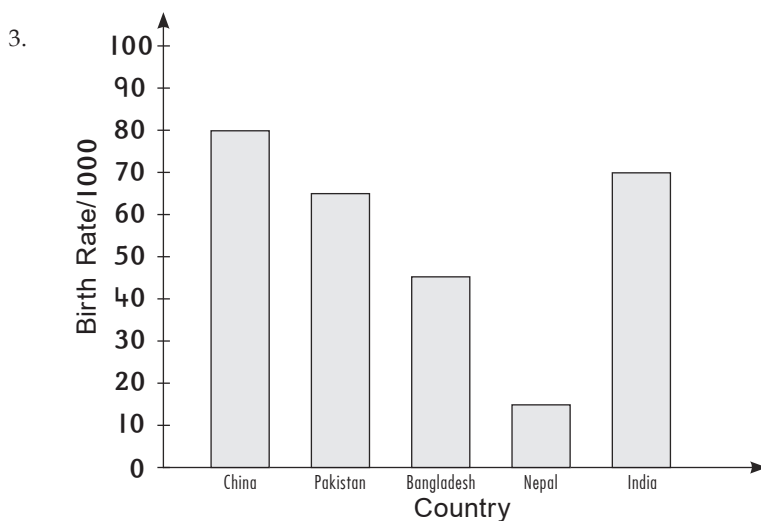
(d) Wednesday and Thursday, Friday and Sunday.

(e) 1750
- (a) 25

(b) It tell us the number of families having a specific numbers of members.

(c) 50

(d) 4



Subject	Marks Obtained
Hindi	86
English	90
Maths	98
Science	88
S.St	94

Exercise 11.1

- ### Exercise 11.2

- ### Exercise 11.3

- ### Exercise 11.4

- ### Exercise 11.5

- | | | | | | | |
|----|-----|-----|----|-----|-----|-----|
| 8 | 12 | 36 | 3 | 20 | 21 | 17 |
| 3 | 9 | 12 | 5 | 13 | 11 | 8 |
| 22 | 42 | 96 | 16 | 66 | 64 | 50 |
| 24 | 108 | 432 | 15 | 260 | 231 | 136 |

2.

6	9	4.5	10	13	8	6
24	36	18	40	52	32	24
36	81	20.25	100	169	64	36

3. 160 m 4. 6 cm 5. 160 tiles
 6. 0.48 m^2 7. Rs 2,50,000

Exercise 11.6

1. (a) 5.52 sq. m b) 400 sq. cm (c) 12.6 sq. m
 2. (a) 36 sq. mm (b) 20.25 sq. cm (c) 256 sq. cm
 3. 4 sq. m 4. 30 m 5. 225 sq. cm 6. 56 cm
 7. 588 sq. m 8. 80 cm 9. 20,000 10. Square by 64sq. cm
 11. Rs 640
 12. (a) 20 sq. cm (b) 11 sq. cm (c) 16 sq. cm (d) 28 sq. cm

MCQ – IX

1. 28 m 2. 16 cm 3. 14 cm 4. 76 cm 5. 5 cm
 6. 81 sq. cm 7. Rs 8000 8. 10 n cm 9. 12 cm 10. 10000 sq. m

Chapter 12

Exercise 12.1

1. (a) (i) Multiply the number of term by 5 and subtract it from 39.
 (ii) n^{th} term = $39 - 5n$
 (iii) 100th term = -461
 (b) (i) Multiply the number of term by 4 and add 1 to it.
 (ii) n^{th} term = $4n + 1$
 (iii) 100th term = 401
 (c) (i) Multiply the number of term by 5 and add 1 to it.
 (ii) n^{th} term = $5n + 1$
 (iii) 100th term = 501
 2. -56, 0, -21, 700, 7n
 3. (a) 28, 31 (b) 16, 8
 4. Number of matchsticks = $6n$, where 'n' is the number of hexagons
 5. $\frac{1}{5}$, $\frac{4}{3}$, 3, 10, $\frac{3}{8}$

Exercise 12.2

1. (a) $8x^34^2$, $9x^2y^2$, $-5y$ (b) 1, $-2a$, $-3b$, $4d$
 (c) $5x^2$, $2xy$, y^2 (d) $3x^3$, $2x$, $-5y$, 9

2. (a) Binomial (b) Quadrinomial (c) Trinomial (d) Binomial
(e) Quadrinomial (f) Monomial (g) Monomial
3. (a) $d = s \times t$ (b) $SI = P \times R \times T$
(c) $A = l \times b$ (d) $A = \frac{1}{2} \times b \times a$
4. (a) $6p + 5$ (b) $4n \div 7$ (c) $3m$ (d) $\frac{1}{2}(a + b)$ (e) $n - 12$
5. (a) $5 \times m \times m \times m \times m$
(b) $3 \times p \times p \times p \times p \times p \times p \times q \times q$
(c) $2 \times a \times a \times b \times b \times b \times c$
6. (a) x^7 (b) $1331x^3y^3$ (c) $5a^6b^6$ (d) $12p^5r^2$ (e) $7776 x^5y^5z^5$
7. (b) and (c)
8. (a) y^2 (b) $-10r$ (c) $-3y^2$ (d) $9x^5z$
9. $12x$ 10. $33a$ 11. $4y - 3x$
12. $7p + 8q - 3r$
13. Let speed of bus = x km/hr
Speed of car = $(x + 10)$ km/hr
14. (a) $7x - 10 = 32$ (b) $x \div 4 = 7$
(c) $x + y = 8$ (d) $x - (2 + 3) = 9$

Exercise 12.3

1. (a) -2 (b) 4 (c) 5 (d) 3 (e) 2 (f) 2
2. (a) 6 (b) 27 (c) 5 (d) 2 (e) 2 (f) 10
3. (a) 8 (b) -1 4. (a) 60 (b) -25

Exercise 12.4

1. 7 2. 54 3. 77 4. 9 5. 30
6. $63m, 21m$ 7. Age of Sita = 17 yrs, age of Ramesh = 11 yrs
8. 13

MCQ – X

1. $x^2 + 2$ 2. 15 3. 3 4. -5 5. $\frac{x}{3} = 21$
6. $8x - 5$ 7. $6x + 6 = 54$ 8. 3 9. 5 10. $27, p$

Worksheet

1. age of Sunil = 21 yrs, age of Gurcharan Singh = 16 yrs.
2. 18 3. 24
4. number of apples = 44, number of oranges = 34
5. number of hens = 16, number of cows = 24
6. Fatima Rs 1380; Nancy Rs 1120
7. 10 8. 60 9. 8
10. 18 11. 5 12. -15

Chapter 13

Exercise 13.1

- (a) 100 : 3 (b) 1 : 50 (c) 1 : 2 (d) 3 : 1 (e) 2 : 25 (f) 1 : 3
- (a) 3 : 1 (b) 8 : 9 (c) 11 : 1311 (d) 7 : 10 (e) 50 : 1 (f) 3 : 4
- (a) 7 : 3 (b) 4 : 7 (c) 1 : 2
- (a) 3 : 5 (b) 2 : 3 (c) 1 : 2
- (a) 5 : 2 (b) 5 : 3
- (a) 1 : 4 (b) 5 : 12 (c) 1 : 3 (d) 3 : 5 (e) 1 : 5 (f) 5 : 2
(g) 2 : 7
- Meesha - Rs 120, Kavita - Rs 80
- Rahim - 35 toffees, Karim - 28 toffees
- (a) 2 : 3 (b) 1 : 3 (c) 3 : 2

Exercise 13.2

- (a) T (b) F (c) F (d) T
- (a) Yes (b) No (c) Yes (d) No
(e) No (f) No
- (a) 4 (b) 30 (c) 63 (d) 50
- 50 kg

Exercise 13.3

- 168 2. 57 3. 240 m
- (a) 8 kg of potatoes for Rs 32
(b) 30 trucks carrying 4500 kg of weight
(c) 9 candles for Rs 117
- 10800 km 6. Rs 1000

Exercise 13.4

- (a) 25% (b) $66\frac{2}{3}\%$ (c) 68% (d) $33\frac{1}{3}\%$
- (a) 235.6% (b) 67% (c) 40% (d) 5.73%
- (a) 40% (b) $27\frac{3}{11}\%$ (c) 87.5% (d) 20%
- (a) $\frac{11}{400}$ (b) $\frac{1}{2500}$ (c) $\frac{89}{25000}$ (d) $\frac{7}{1000}$
- (a) 0.00456 (b) 0.7675 (c) 0.125 (d) 0.008
- (a) Rs 60 (b) 90g (c) 200m (d) 75l
- (a) 50% (b) 40% (c) 60%
- Savings Rs 2400; expenses Rs 7800
- Rs 490

MCQ – XI

- 3 : 20 2. 14, 35 3. 1 : 2 4. 17 : 120 5. 35
- 12 7. 4000 km 8. Rs 80 9. 48 10. 1.2

Chapter 14

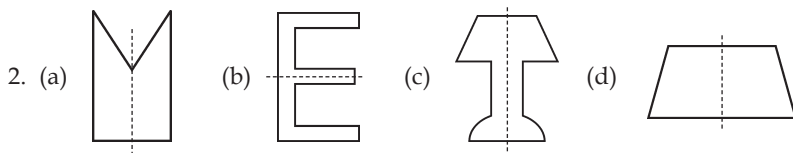
Exercise 14.1

1. (a) Profit Rs 50 (b) Loss Rs 150 (c) Profit Rs 50 (d) Profit Rs 150
2. (a) Profit 50 % (b) Loss $12\frac{1}{2}\%$ (c) Profit 4 % (d) Loss $16\frac{2}{3}\%$
3. Profit Rs 56 4. Profit Rs 60, Profit per cent 25%
5. Profit Rs 60, Profit per cent $33\frac{1}{3}\%$ 6. C.P. Rs 700; loss percent $14\frac{2}{7}\%$

Chapter 15

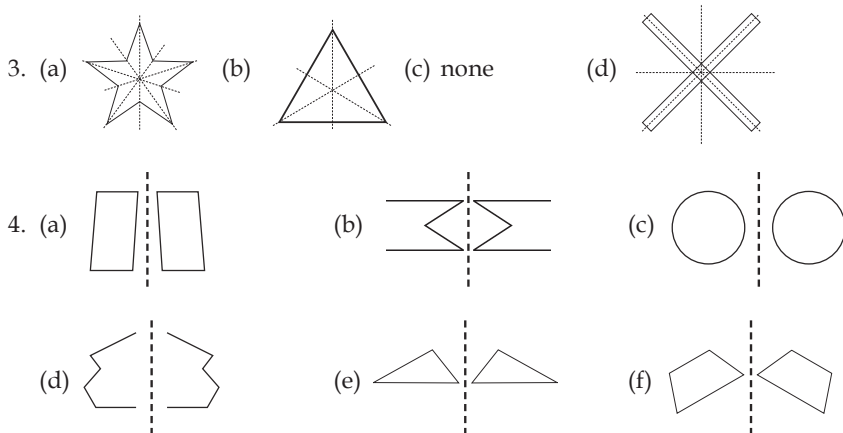
Exercise 15.1

1. (a) Yes (b) Yes (c) No (d) No (e) Yes



Exercise 15.2

2. B - horizontal, E - horizontal, H - both, J - none, K - horizontal, M - vertical, O - both, P - none, T - vertical, W - vertical



MCQ – XII

1. three axes of symmetry 2. two axes of symmetry
3. 1 axes of symmetry 4. 1 axes of symmetry
5. 1 6. 1 7. 5 8. scalene triangle
9. reflection 10. two identical parts

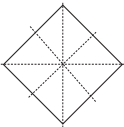
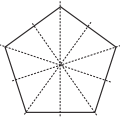
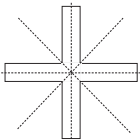
Chapter 16

Exercise 16.1

- 1 line segment
- (a) 4 line segments - AB, BC, CD, DA, Rectangle
(b) 5 line segments - AB, BC, CD, DE, EA, Hexagon
(c) 3 line segments - XY, YZ, ZX, Triangle
(d) 4 line segments - PQ, QR, RS, SP, Quadrilateral

Sample Paper

SECTION A

- $97532 > 97325 > 75923 > 32975 > 25397$
- 2880
- (a) $3 + (-5) = -2$ (b) $-7 - (-3) = -4$
- (a) $\frac{48}{30}$ (b) $\frac{8}{5}$
- 112.25, 79.5, 56.601, 23.456
- (a)  (b)  (c) 
- Rs 270, Rs 450
- 18, -15, -5, 0, 6, 12, 23

SECTION B

- (a) 800 (b) 23000 (c) 60000 (d) 10
- (a) $x = 2$ (b) $x = \frac{-31}{3}$
- 170 l
- (a) AB, BC, CD, DE, EA (b) AC, AD, BD, BE, CE
(c) AB, BC (d) $\angle BCD, \angle CDE$
- (a) $\frac{-17}{36}$ (b) $\frac{-23}{24}$
- 8352 m, 8.352 km
- (a) $x = 60$ (b) No
- $\frac{5}{8}, \frac{3}{4}, \frac{5}{6}, \frac{9}{8}, \frac{3}{2}$
- (a) -7 (b) 39
- (a) 303.013 (b) 588.426

SECTION C

2. (a) 23 apples for Rs 92 (b) 2 dozen notebooks for Rs 192
 3. Number of Rs 100 note = 30 Number of Rs 50 notes = 40
 4. 250000 tiles, Rs 1250000

5.

Course	Number of Students
Science	○ ○ ○ ○ ○
Commerce	○ ○ ○
Humanities	○ ○ ○ ○
Vocational Studies	○ ○ ◐
Mass Communication	○ ○ ○ ◐

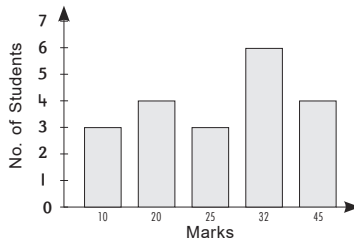
○ represents 50 students.

6. (a) O (b) BOE, AOC
 (c) AB, CD (d) AXC, CYB
 (e) AD, BE, AC (f) OB, OE, OD
 (g) AC, CY

7. Length of wire = 48 cm
 Length of rectangle = 19 cm

8.

Marks	Tally Marks	Frequency
10		3
18		4
25		3
32	/	6
45		4
Total		20



Mental Ability Test

- | | | |
|-----------------|--------------------------------|----------------------------|
| 1. 60 | 2. $\frac{5}{6}$ | 3. 2 |
| 4. Rs 135 | 5. 35 | 6. 9 (not a prime number) |
| 7. 20 km | 8. 0.0053 | 9. 14 |
| 10. 10 | 11. 1500 m | 12. 90 m |
| 13. 5 | 14. 13 | 15. 7 (not divisible by 3) |
| 16. 192 | 17. 7 (series of prime number) | |
| 18. 116° | 19. Both | 20. 2.568 |